

HAMADRYAD

7: No. 2

May 1982



*The two most striking features of Varanus flavescens (top)
are the large neck scales and short snout. Below is the
distinctive Bangladesh race of V. bengalensis*

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HAMADRYAS : NEWSLETTER OF THE MADRAS SNAKE PARK TRUST

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News from the MADRAS SNAKE PARK and
MADRAS CROCODILE BANK

In January, a Snake Park group spent a week in Yercaud in the Sheveroy Hills. The most prevalent snake was Uropeltis elliotii found invariably 10-15 cms below the surface in damp, cool areas. We were not able to locate any original forest except small tracts bordering coffee plantations.

The Snake Park's rodent commando squad seems to be gaining popularity and in February two Irulas were at a stud farm in Bangalore which is having a severe rat problem. The Rattus rattus and Bandicota indica have established themselves under granite floors of the stables and burrows were smoked out but for chronic situations like this one the answer may be to release large numbers of rat snakes on the property. The problem is, will they stick around ?

Douglas Bell a graduate student of the University of Munster is here for three months to study the feeding mechanics of chameleons.

Vishnu Mathur, working on a film on cobras for Canadian television, was in Madras during February, filming cobras with the assistance of the Park.

The Director is again in Bangladesh, this time to carry out a crocodile survey.

The ticket fee for the Crocodile Bank has, as of February 15, been raised to Re 1/- for adults and 50 paise for children. The tourist gets his money's worth, thanks to the new feeding platforms from which a nervous keeper throws fish to a mael of jumping crocodiles. At the inauguration of the first platform the bamboo structure gave way and the Director dangled over 100 hungry 4 year olds as cameras clicked wildly.

Dr Anton de Vos, FAO consultant to the crocodile project in India was at the Crocodile Bank for three days. He was in India for three months visiting rearing complexes and release sites to assess the progress of the Indian project and write a manual on crocodile farming.

PESTICIDES AND FROGS

Dr. P. Mohanty Hejmadi who set up the amphibian research laboratory in Bhubaneswar, Orissa and Dr. Sushil Kumar Dutta have demonstrated that all the stages of the economically important bull frog Rana tigrina are adversely affected by pesticides and fertilizers used in their habitat (agricultural areas). Dr. Hejmadi has opposed a move in the Lok Sabha for a ban on frog catching because she feels that this will not replenish frogs in depleted areas as long as pesticides are used. She feels that frog culture/and selective release of juvenile frogs is the answer.

This approach is hard to understand in the context of the fact that millions of bull frogs are chopped up every year by the frog-leg industry for export. Apart from the crime of protein export from India the ecological implications have not been studied.

HERPETOLOGICAL BOOKS

Herp. books are available from Steven Weinselbaum, Herp. Search Service, 117 East Santa Barbara Road, Lindenhurst, New York 11757. This is a good contact for Indian students of herpetology as there are now no foreign exchange restrictions on publications.

WWF SPA TURTLE HATCHERY

The World Wildlife Fund-India, Tamil Nadu Branch hatchery for sea turtle eggs is located at Injambakkam village, south of Madras in the Grindlays Bank rest house compound. Some 20 volunteers have been involved in the project, organized by Anne Joseph. 44 Olive Ridleys nests were collected and re-buried in the hatchery. Eggs were also bought from commercial collectors at 5 paise each. There were unpleasant confrontations with poachers after which volunteers were accompanied by Forest Department guards.

SNAKEBITE

J. Vijaya met Dr. Haripada Mallik of Janka, Midnapore District, West Bengal on 15th September '81. He has examined snakebite victims since he was first posted at Janka 40 years ago; around 200-300 victims come to his clinic every year. Snakes responsible are the spectacled cobra, monocled cobra, banded krait, common krait and Russell's viper, in that order.

In 1980 there were 3 deaths and one in 1981 (upto September). On 13 September a 12 year old boy was bitten by a 6 ft monocled cobra in his house at 7 p.m. Taken to a country doctor and brought to the clinic only at 2 a.m., he died soon after.

Janka is close to the sea and Dr. Mallik has treated sea snake victims (Hydrophis). According to him death by snakebite is as low as 2%. Most cases are cobra bite and come in during the rains. Villagers fishing in paddy fields, standing in knee deep water, are generally the victims.

ATTACK BY A NEST-GUARDING FEMALE MUGGER (*Crocodylus palustris*)

At 6 a.m. on 8.3.82 the 35 year old Gurkha watchman, Bhagat Ran was routinely checking nest temperatures in Breeding Pit 8 at the Crocodile Bank. Female mugger "Anara" was in the water watching Bhagat Ran as he squatted to insert the thermometer into the PVC tube buried into the nest for the purpose. He is an experienced crocodile worker and as usual had a stout stick with him. As he describes it, he turned away from Anara for a second while he checked the temperature and the next thing he knew she had his right lower leg in her jaws. He threw notebook, thermometer and stick on her head and she fortunately let go without shaking or rolling.

The bite resulted in 5 deep punctures in the calf and shin, one which required 4 stitches to close. He had tetanus and antibiotic injections and recovered rapidly with daily dressing changes and antibiotics.

No one ever doubted that nest guarding female crocs really mean business but this kind of sneak attack has perhaps not been sufficiently appreciated, are you listening Jeff, Ted, Basu, Binod et al ?

LEATHERBACK WASHED ASHORE ON MADRAS COAST

On 27th March '82 a dead leatherback sea turtle (*Dermochelys coriacea*) was washed ashore at Covelong some 17 kms south of Madras city and was found by fishermen at about 6.45 a.m. The turtle was torn open across the carapace and had probably been run over by a trawler.

It measured 2.5 meters across the carapace and the left front flipper measured 80 cms. The identification was confirmed by the Central Marine Fisheries Research Institute people who saw the specimen.

Ms. Reliable Ferret
MSPT

SNAKE SCATS AROUND MADRAS CITY

Of 11 scat samples collected by MSP on the outskirts of Madras city in Aug/Sep/Oct 81 5 had rodent remains which account for 45% of the samples.

Of the 5 samples, 4 are that of cobras and one of a rat snake. Rodent fur found in the scats include that of :

1. *Bandicota bengalensis*, the Indian mole rat, 50%
2. *Tatera indica*, Indian jerbil, 33%
3. *Millardia mactada*, the soft furred field rat 17%

All the scat samples were collected from near rice fields.

RUSTLE IN THE NIGHT

At our famous Snake Park at Madras a common refrain is that 70 per cent of snakebites occur on the feet and legs when snakes are trod upon; ergo, watch where you walk, carry a torch, lantern or stick at night. The following little episode of a few weeks ago freaked me out sufficiently to take our own advice to heart.

I woke up in our beach house and groaned slightly as the dog, Tikki, repeated a staccato of barks into the new moon darkness. Neglecting the torch, I pushed the half door open with my knee and staggered down three steps to the sand. My dimly perceived purpose was to ascertain why she was barking, and mainly to shut her up before the rest of the household woke up.

My next step into the black night came down on something rough, thick, alive. My first micro thought was "Tikki's tail", then "sand boa" (we had seen one of these harmless snakes here recently). My foot flew back and I did a fancy backwards dance step. Just then the darkness was pierced by a loud, forceful hissing and for a long second I was startled numb.

I flew into the house, grabbed the torch and teleported back outside. The dog was meanwhile silent, and the torch beam showed her with clenched teeth and crouched at the limit of her chain. There stretched out in the depression she usually lay in, was a hefty one-and-a-half metre long Russells Viper, still venting his frightened or outraged hissing.

I quickly released Tikki who was straining silently at the chain and she didn't need much urging to keep clear of the big snake. My wife Zai, was in action now, woken up by the loud hissing and my scrambling. She handed me my professional snake hook and I lifted the heavy, writhing still-hissing viper into an old water drum. Jamming the lid I stood back and leaned on Zai, my knees like jelly.

It was 1.21 a.m. and the stars were crisply bright, the sea air with just a hint of winter in its coolness.

Second moral : some snakes are gentlemen !

R.Whitaker (from Indian Express 4.3.'82)

CROCODILES IN ZIMBABWE

(Continued from Hamadryad 7:1, R. Whitaker was in Africa for FAO during Nov/Dec 1981)

I bid farewell to Senor Tello and his charming wife Tereza, a veterinary doctor with Emofauna, Mozambique. An early morning flight from Maputo got me to Salisbury to be met by David Blake the crocodile man of Zimbabwe National Parks and Wildlife. By his kind arrangements I was enroute to Victoria Falls in one of the sturdy old Viscounts with huge clear port holes to view the farms and forests below and finally Lake Kariba. Clive Irwic and wife Sharon looked after me, Clive being foreman at the Spencer Creek Crocodile Farm where my friend Rob Gee is Managing Director. Their breeders produced 1800 eggs last season and in addition they collected 2000 eggs from the banks of the Zambezi. The normal hatching average is 80% and then about 30% mortality in the first year. This year however was disastrous with nearly a total loss of hatchlings due to unknown causes.

The farm is open to the public and has a crocodile biology diorama display, practical pens for rearing different age classes of crocs and spacious breeding enclosures with natural vegetation and trees festooned with masked weaver bird nests and their noisy inmates.

Early one morning I walked the 6 km from the hotel to the Falls along the bank of the Zambezi, still wild and plenty of game. I saw hippo and crocodiles on the river islands and passed right through a family of warthog accompanied by a nyala. Tracks of buffalo and Kudu were abundant and there were numerous noises in the bush I couldn't identify. As the morning warmed up I started seeing Nile monitors basking or swimming and counted ten before I reached the falls. All falls are hypnotic and the wildness of these was especially pleasing. There were little patches of rain forest where spray from the falls rains for 24 hours. I heard frogs calling in the daytime within these of out patches of forest and wondered if anyone has examined them closely. That day I missed a swift and beautiful green snake and caught a small tiger snake. Next day we visited the small snake exhibit operated by the owners of Zambezi Taxidermy. They had a nice looking black mamba about 3 meters long and a good variety of many of the common local snakes, including puff and night adders, banded Egyptians, black necked spitters, boomslangs and others. Later I was on my way over Lake Kariba headed for the short airstrip of Kariba (impala grazing nonchalantly as we land), thanks to Fisheries ecologist Brian Marshall. Here I saw the fishing industry built around the little freshwater sardine called "kapenta" (Linnothrissa nucodon). The Tilapia were large and plump and the tiger fish very impressive with crocodile-like teeth.

I spent an interesting day with Keith Yates, owner of the Kariba Crocodile Farm. His breeders produced 19 nests last season and he also collected 2000 eggs from the lake and the river below the dam. He feeds his young crocs on kapenta to cropping size. Adults eat elephant or other wild meat culled by National Park people. As at Spencer Creek all parts of the crocodile are used, feet for key chains, heads for curios, back skin for belts and meat to hotels or back to the crocs.

Back in Salisbury (what a beautiful city!) for the night and early next morning Dave Blake and I get on another Viscount down to Kyle National Park. Two man-eating crocs had been trapped near the Sabi River and I was to see a drugging demonstration as they were transferred, weighed and measured. Kyle is a small park but with nice proportions of lake, hills and flat grasslands which support large numbers and a wide variety of wildlife. The Warden Graham Wiltshire drove us through and we saw white rhino, giraffe, wildebeest, tseebbee, eland and zebra. A large Nile monitor basked on a boulder and let us pass closeby. Dozens of dassies sat in meditation or fed close to their retreats in the boulders. Chameleons are common and we saw several attempting to cross the road. Visitors can ride into the park on horseback and part of the lake is a recreational area where fishing is popular for a mixed variety of American, European and African species. The water is clear enough for spear fishing which can be hazardous if one of the resident crocs mistakes you for a fish.

The temperature was 25° C and the two crocs were under 20 minutes after their jab from Dave's pole syringe. Flaxidyl, the drug he uses, makes the animal completely relaxed without knocking it out. Eyes and ears are bandaged out of consideration but no other restraint is needed. Thinking about the troubles we've had dealing with routine handling of big crocs, drugging really simplifies things and eliminates the possibility of injury to man or croc. The main point is that the croc must be easily retrievable; while a darted croc will generally rest in the shallows there is the risk that it might slip into deep water and drown.

One striking symptom of this drug is that the crocodile's mouth remains open in this totally relaxed state. There are many reasons given for the standard open-mouth of the basking crocodile and there is perhaps some truth in all of them (thermoregulation, cleaning and threat are some of them). The reaction seems to confirm what Alistair Graham first theorized in print that the open-mouth posture is simply the most relaxed. Still it was a startling sight, Dave reaching into this conscious crocodile's throat to remove a fish hook and a length of line. Among other things learned that day, the Park's people demonstrated an ingeniously simple snare that had proved successful with crocodiles of many sizes. Next day I was on an Ethiopian Airlines jet seeing Mts. Kenya and Kilimanjaro, then right over Lake Rudolf and other Rift Valley lakes, half wishing for a soft forced landing.

R. Whitaker
December 1981

INDIAN COBRA (*Naja naja naja*) GROWTH RATES IN ONE YEAR

On 26th July 1980, a female spectacled cobra (*Naja naja naja*) measuring 116.5 cm snout-vent, 23.5 cm tail laid 15 eggs in the demonstration pit at the Snake Park. The eggs measured 4.5 cm in length and 2.5 cm in width.

Hatching began on 26th September continuing upto 29th September after 62-65 days of incubation. Incubation temperature was 28.4°C. 13 of the 15 eggs hatched successfully. The sex ration was 9 male : 4 female. Hatchlings measured 23.9 cms snout-vent, 5.2 cm tail and weighed 9.7 cm on an average.

The hatchlings were force-fed with pieces of frog-leg meat from *Rana tigrina* and *Rana cyanophlyctis* during the early stages of their growth and later with field mice (*Mus booguda*). Now they feed on 3-4 common house rats (*Rattus rattus*) or 3-4 house mice (*Mus musculus*) once a week. 3 (2 females & 1 male) of the 13 cobra hatchlings survive today.

Subsequent growth rates taken on the cobras from the time of their hatching are given below :

	Date	Snout-Vent	Tail	Weight
1.	29.09.80	23.9 cm	5.2 cm	9.7 gm at hatching
2.	24.10.80	29.0 cm	6.2 cm	12.8 gm
3.	28.11.80	30.8 cm	6.2 cm	12.8 gm
4.	29.01.81	32.1 cm	6.6 cm	14.7 gm
5.	01.04.81	33.5 cm	6.9 cm	-
6.	01.05.81	36.4 cm	6.9 cm	26.0 gm
7.	24.06.81	39.0 cm	7.5 cm	23.0 gm
8.	25.08.81	44.6 cm	8.3 cm	33.0 gm
9.	06.11.81	51.5 cm	10.5 cm	66.5 gm
10.	05.02.82	65.8 cm	13.4 cm	134.3 gm
11.	25.03.82	69.8 cm	13.4 cm	134.3 gm

Recently one of our keepers was bitten by the biggest of the three hatchlings, a female. He was treated with 20 ml antivenin.

- Average growth at the end of the first year : 32.9 cms
- Average growth since hatching to now : 54.1 cms (18 months)

J. Vijaya
MSPT

MONITOR LIZARDS : IDENTITY AND SEXING PROBLEMS

It is often difficult getting a squirming reptile to cooperate in matters of taxonomy and usually requires gentle and patient persuasion. One group of reptiles which has caused some problems particularly in the field are the varanids : the Bengal monitor (Varanus bengalensis), the north Indian yellow monitor (Varanus flavescens), the desert monitor (Varanus griseus) of northwest India and the water monitor (Varanus salvator) now found only in the Mahanadi and Ganges deltas and the Andamans and Nicobar Islands.

Figure gives some of the main distinguishing characteristics of the 4 species. They are quite distinctive once a large number of each species has been examined. The yellow ringed pattern and large eye of the water monitor are distinctive as are the short snout and digits of the yellow monitor (see cover photo), black temporal streak and pointed snout of V.bengalensis and the rounded tail of the desert monitor.

The young are brightly coloured. The common monitor has a wide band of yellow on the tail which disappears after two years.

Sexing

Male monitors of the four species grow longer and can be considerably bulkier than females. The tail base is broader in males and the outline of the hemipenes is generally visible. The hemipenes can be carefully probed as in sexing snakes but females of V.bengalensis reportedly have half formed hemipenes of unknown function. In a recent sample of V.flavescens and V.bengalensis examined in Bangladesh we made some preliminary observations of sex characters in males. The flaps and pores illustrated on the back cover seem to be much more prominent in males and are apparently secondary sex characters of unknown function if any. While the three species examined in Bangladesh have them, they are most obvious in V.flavescens. Further observations are needed to establish the reliability of these very useful sex characters; V.griseus has not yet been examined in this context.

KEY TO THE INDIAN VARANID LIZARDS

<u>Character</u>	<u>Common monitor</u> <i>Varanus bengalensis</i>	<u>Yellow monitor</u> <i>Varanus flavescens</i>	<u>Water monitor</u> <i>Varanus salvator</i>	<u>Desert monitor</u> <i>Varanus griseus</i>
Transverse rows of belly scales (Collar-groin)	90-110 (smooth)	65-75 (smooth)	80-95 (feebly keeled)	110-125 (smooth)
Total length	1750 mm	830 mm	2500 mm	1325 mm
Snout length	2-2½ times height	length less than twice height	depressed at end, length 3 times height	depressed at end, length 2-2½ times height
Nostril	Oblique slit, nearer to orbit than to snout tip	Oblique slit nearer to snout tip than to orbit	round or oval twice as far from orbit as from snout tip	Oblique slit nearer to orbit than to snout tip
Digits	elongate	short	elongate	moderately elongate
Tail	flattened	flattened	flattened	round or slightly compressed posteriorly
Scales on crown of head	larger than nuchal scales*	smaller than nuchals	larger than nuchals	usually larger than nuchals
Nuchal scales	rounded	strongly keeled	keeled	conical in shape
Egg laying**	Madras-Dec M.P. -Sep Pakistan -Aug	Bangladesh-Aug	June	?
Distribution	Throughout India and neighbouring countries upto 2500 m	Possibly restricted to the Gangetic region; common in Bangladesh	Bhitarkanika in Orissa, Sunderbans in Bengal, Andamans, Bangladesh	Rajasthan, possibly part of Punjab, U.P. east to Agra, Sri Lanka

* Nuchal scales are those just behind the head - 1st neck scales

** Coincides with monsoon rains and V.bengalensis and V.salvator, at least, often use live termite mounds as incubators for the 7-9 month incubation periods.

References :

1. Minton, S.A., A key to the reptiles and amphibians of Sind and Las Bela, Pakistan, AMNH. No. 2801, 1962.
2. Smith, M.A., Fauna of British India, Vol. 2, Sauria, reprint by Ralph Curtis Books, Fla., 1973.
3. Fitch, H., Reproductive cycles in lizards and snakes, Univ. of Kansas, 1970.
4. Biswas, S. & S.Kar, Observations on nesting habits and ecology of Varanus salvator, J. BNHS, Vol.78, No.2, 1981

R. Whitaker & M.A.R. Khan

SNAKES OF THE SUNDERBANS (24 Parganas, West Bengal)

The Gangetic delta region known as the Sunderbans is comprised of one of Asia's largest mangrove swamps. Surrounded as it is by two of the most densely populated human habitats in the world (Bangladesh & W.Bengal), it still contains a wealth of wildlife from tigers to king cobras because of its inhospitable nature. On the Indian side a part of the Sunderbans is one of the Project Tiger reserves.

<u>Species</u>	<u>Habitat</u>
Common worn snake <u>Typhlina branina</u>	leaves, logs in moist forest. Often found in village huts
Indian Rock Python <u>Python nolurus</u>	mangrove forest, scrub, moist forest
Common wolf snake <u>Lycodon aulicus</u>	often seen in brick and cement constructions and huts
Striped keelback <u>Amphiesma stolata</u>	wide habitat range from bushes in open country, rice fields, pond edges, grass meadows
Green keelback <u>Macropisthodon plumbicolor</u>	paddyfields, hilly areas near water. Has been found in dry areas also along village street, etc.
Checkered keelback <u>Xenochropis piscator</u>	ponds, rivers, streams, flooded rice fields

Rat snake <u>Ptyas mucosus</u>	fields, barns, ware houses, village huts, Favours human population with attendant rats
Bronzeback treesnake <u>Dendrelaphis tristis</u>	favours trees and bushes in open country
Vine snake <u>Ahaetulla nasutus</u>	often seen along shrub fringes
Dog-faced watersnake <u>Cerberus rhynchops</u>	generally found in muddy and rocky estuarine areas but also in ponds and rivers
Trinket snake <u>Elaphe helena</u>	rock piles, crevices, gardens, open areas
Common krait* <u>Bungarus caeruleus</u>	sandy soil, open - populated - areas where rats are plentiful
Spectacled Cobra <u>Naja naja</u>	paddyfields, open ground around villages, pond sides, forests
Monocled cobra <u>Naja n. kaouthia</u>	same as that of spectacled cobra
King cobra <u>Ophiophagus hannah</u>	dense estuarine mangrove areas
Pit viper probably <u>Trimeresurus erythrurus</u>	thick bamboo stands and other dense, wet foliage
Cat snake <u>Boiga trigonata</u>	trees and bushes
Russells viper <u>Vipera russelli</u>	hilly country, plain scrub jungle, termite mound, rat holes, thorn bushes and cacti

* Whitaker (1978) and Deoras (1978) report that common kraits are uncommon in Bengal, and banded kraits common. While this is true for northern Bengal, the common krait is one of the most common venomous snakes in the Sunderbans. The banded krait has not been reported for 16 years.

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SALTWATER CROCODILE IN S.INDIA - FIRST
- FIRST RECORD FOR FORTY YEARS

Recently Trustee Harry Miller phoned up to say that a crocodile has been caught by fishermen in Karikal, Tamil Nadu. Immediately Croc Bank Manager headed to Pondicherry, secured the necessary permission to "rescue" the croc and proceeded to a sea-side village near Karikal.

There he found a fine 2.80 m, 80 kg male C.porosus tied in a canal with a police guard posted. It was caught by fishermen Vairakkanu 4 kms from shore in a "thirka-valla", a net set for sharks and rays. It was carefully crated and transported to the Crocodile Bank as there was clearly no suitable habitat on this coast. So where did it come from?

In 1978, 3 m male salty turned up in fishermen's nets in the mangroves of the Krishna delta in Andhra Pradesh. Bustard and Choudhury (1981) give a half-hearted explanation of how it probably came from the Andamans, over 600 kms away. There are notable examples of salties traversing great gaps of sea between islands but coastal migrations are probably more frequent.

India's east coast currents are seasonally strongly north-south. A straying salty (males are much more ambient) could reach the mouth of the Krishna in a 600 km swim from Bhitar Kanika (the saltwater sanctuary in Orissa). The Karikal crocodile had less than half that distance (500 kms) to cover if it originated in Trincomalee on the east coast or Puttalan on the west coast of Sri Lanka, the closest salty populations to Tamil Nadu.

Tamil Nadu reportedly once had saltwater crocs, they inhabited the mangrove swamps of Poochivaram near Porto Novo and Muthupet near Point Calimere. The last one on record was a stray killed in Madras Harbour in 1940; perhaps it was of Sri Lankan origin as well. Recently some well-meaning conservationists from Kerala asked us to undertake a survey of potential habitats for restocking C.porosus on the coast of Kerala. Our answer was the same as it is for most of the coastal mainland, there is no suitable habitat left. The saltwater croc is a large predaceous species and the female has special nesting requirements. Our few remaining mainland mangrove swamps are too disturbed to permit the restocking and rehabilitation of the salty, with the exception of Bhitar Kanika (Mahanadi delta) and especially the Sunderbans (West Bengal and Bangladesh). The situation will soon be the same in the rapidly developing island of Sri Lanka. The saltwater crocodile may hold out in the Nicobars for some time to come but in the Andamans uncontrolled human settlement is sealing this reptile's doom.

These occasional visiting salties are probably pressured away from their home range, naturally by resident territorial males and artificially by human interference.

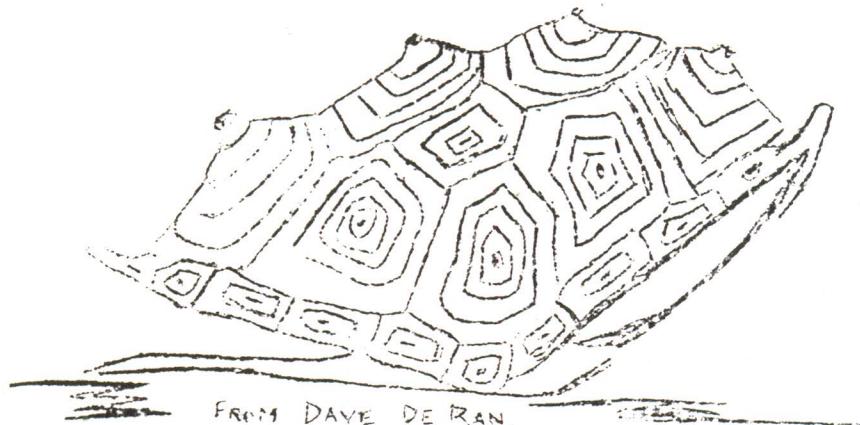
COMMON IGUANA (*Iguana iguana*) BREEDING AT THE SNAKE PARK

A two year old common green iguana hatched in the summer of 1980 (Hamadryad, 6: No 1) now a length of 32 cm snout to vent, and 72.5 cm vent to tail and weighing 995 gms, laid 35 eggs on 20 February 1982.

She was observed mating in November '81. The male, also of the same clutch, displayed a reddish yellow colour throughout the courting period and would not feed well. He was seen biting the female in the neck region while following her around the enclosure.

On 17 February, the female began nest excavation. Subsequently over the next two days (18th and 19th Feb) she continued to dig at the site. On 20th February morning the eggs were found in the nest cavity (21 l x 17 w x 52 d). Temperatures were : 29.5°C at egg layer, 30°C air. The eggs measured 2.1 x 1.6 cm and weighed 4 gms on an average. The eggs were removed from the cavity for artificial incubation. Throughout the egg removal the female stayed close to the nest, occasionally licking the excavated soil but no aggressive behaviour was noticed.

A. Subramani &
Dharmaraj
Demonstrators
MSPT



PUBLICATIONS

Bustard, H.R. and B.C. Choudhury (1981). Marking crocodiles for release back into the wild for subsequent identification. Indian Forester, 477-485.

Bustard and Choudhury describe a marking system used by the Govt. of India/FAO/UNDP Crocodile Project for captive reared crocodiles released into sanctuaries. Combinations of the double and single row tail scutes are cut to indicate sex, year of release and, if required, individual identification.

Bhaskar S. (1981) Preliminary report on the status and distribution of sea turtles in Indian waters. Indian Forester, 707-711.

Discusses the distribution of sea turtles in India, on the east and west coasts and the Andaman-Nicobar and Lakshadweep island groups, with a map of known nesting and feeding areas of the 5 species in India and Sri Lanka. Comprehensive first-hand information.

Auffenberg, Walter (1981) Behaviour of Lissemys punctata in a drying lake in Rajasthan, India. J. B.N.H.S. 78 (3) : 487-493.

Results of a study in Keoladeo Ghana Sanctuary, Rajasthan during October/November 1979 show that Lissemys punctata is well adapted to deal with drought conditions and successfully buries itself in dry pond bottoms. This reduces dessication as well as predation.

Bustard H.R. and L.A.K. Singh (1981) Age at onset of sexual maturity in male Indian mugger reared under ideal husbandry conditions in captivity. J. B.N.H.S. 78 (3) : 607-609.

Four C. palustris at the Gharial Research Centre, Orissa reached 1.62 m and 1.74 m - presumed breeding size - after 2½ years. Females of comparable size were unavailable and though there was no successful breeding, evidence was obtained which indicated the males were sexually mature.

Bustard, H.R. and L.A.K. Singh (1981) Gharial attacks on man. J. B.N.H.S. 78 (3) : 610-611.

Describes four known attacks by gharial; one by a female guarding her nest, the rest, cases of mistaken identity. No deaths.

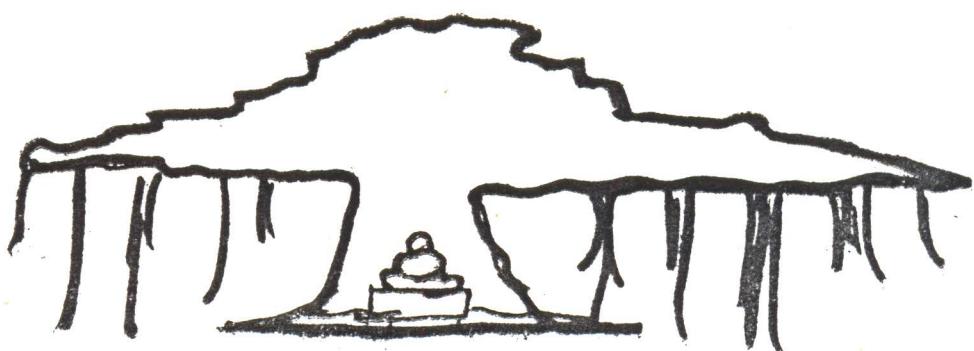
Vyas, Tej Prakash and Madhu Vyas (1981) A note on the slender coral snake Callophis melanurus. J. B.N.H.S. 78 (3) : 611-612.

C. melanurus were collected in Dhar (M.P) kept in captivity and on worm snakes.

Brazaitis, Peter (1981) Maxillary regeneration in a marsh crocodile. Journal of Herpetology 15 (3) : 360-362.

An 8 year old C. palustris received a crushing bite (described in ghastly detail) from a Malayan gharial at New York Zoo Park. Regeneration of bone, teeth and tissue noted.

Inskip, Tim. Indian trade in reptile skins. Report for the Wildlife Trade Monitoring Unit of the IUCN. Important contribution to conservationists here and comprehensive data on an elusive subject.



IUCN/SSC SNAKE GROUP

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EDITORIAL

Responses to requests for snake status have been gratifying from Europe and the United States, patchy for Africa and Australia and very lean from South America and Asia. This is predictable and of course related to the sheer number of professional and amateur herp people in the two former regions. Obviously I haven't heard from all people out there who know what's happening to rare and endemic snakes and the reader is encouraged to send on names and addresses of persons and organizations who might provide such information.

It is not surprising that we have little information on snake status for most tropical areas, when taxonomy and distribution is still so far from being established. The rate of forest disappearance makes studies in these countries all the more urgent. The Snake Specialist Group will not "neglect" the so-called developed countries but will emphasize initiating studies and conservation action in the tropical, southern countries where the need is greatest. A good start will be to compile a list of people, agencies and projects (anything from individual thesis work to Govt. level schemes) which could conveniently incorporate snake status study.

Lest this sound too optimistic, we will narrow it down to the really feasible programmes to study and conserve species identified as being in serious trouble. India has given up millions of dollars of annual foreign exchange earnings by banning the export of snake skin. Unfortunately the international pattern of events in the skin trade quickly shifted the pressure to snakes in countries like Pakistan, Bangladesh, Thailand and Indonesia. Germany, Japan, France and Italy head the list of users

of snake skin with the U.K. and the U.S. following behind. First data on status often comes in the form of skin statistics. What amazes one are the sheer numbers, I mean, what a massive catching effort, what a tremendous carrying capacity, that contributed upwards of 10,000,000 snakes in a single year from some part of India alone! If the skin people had put a fraction of their earnings into studying the populations they were exploiting perhaps a complete ban would have been unnecessary. Unfortunately there is little precedent to show that reptile skin traders think ahead.

SUMMARY OF REGIONAL CORRESPONDENCE

BANGLADESH

Dr. Reza Khan writes that no work has been done on the snakes of Bangladesh except some very scanty studies. He is preparing a snake conservation brochure in Bengali. Species under constant pressure are :

<u>Python molurus molurus</u> and	- skin trade, habitat loss.
<u>Python reticulatus</u>	- skin trade
<u>Ptyas mucosus</u>	- killed when seen as it is believed to suck cows' milk
<u>Elaphe radiata</u>	- skin trade
<u>Bungarus fasciatus</u>	- skin trade
<u>Naja naja naja</u> and	- skin trade, venom export
<u>N.n.kaouthia</u>	- capture, habitat destruction
<u>Ophiophagus hannah</u>	- skin trade
<u>Vipera russelli</u>	- skin trade

CZECHOSLAVAKIA

Dr. Vladislav Jirousek, Director, Zoopark Jihlava recommends that the following species be added to the RDB lists :

<u>Vipera kaznakovi</u>	- USSR, Turkey
<u>Vipera bornmuelleri</u>	- Lebanon
<u>Vipera lebetina turanica</u>	- USSR, Afghanistan, Pakistan

He supports the proposal to include Vipera ammodytes transcaucasiana but feels V. xanthia raddei is not endangered and large populations exist in the high mountain plateau of Armenia.

HUNGARY

Keith Corbett of the British Herp. Society, London writes - "It would be premature of me to report on any immediate snake problem in Europe but by co-incidence both myself and the late Donald Street were associated in assessing the habitat and status for one of Europe's most threatened snakes Vipera ursini rakosiensis in its remaining refuge of the Hungarian Puszta. It used recently to be locally abundant also in eastern Austria and accordingly the Council for Europe are deliberating on what can be done there within the brief of their 'Critical Habitat Strategy'. It is unfortunate that Hungary is not involved with the Council of Europe for I believe that there are real problems there surrounding most of its remaining habitat."

Although seen more easily when in the damp (summer) meadow Puszta, this species probably requires more the adjacent dry sandy Puszta dune slopes, and if so then this habitat is under severe pressure. There are good Puszta reserves in Hungary, but, these are usually maintained for 'cultural farming' and the resulting wildlife value is mostly associated with the low-lying and potentially damp Puszta.

Elsewhere in Hungary, there are non-protected areas of dune Puszta with this snake and several other interesting reptiles, but they are being increasingly destroyed via mechanised agricultural reclamation and by military disturbance. Apart therefore from what lessons can be learnt and applied to Austria, I would propose international co-operation with the Hungarians (via IUCN) to more fully assess this habitat and ensure that its xerophytic grass and shrubland is adequately conserved.

JAPAN

Dr. Yoshio Sawai was in New Delhi in November '81, attending a WHO meeting on the management of snake bite. He was on his way to Burma as consultant for a snakebite survey project in Sri Lanka, Burma and Bangladesh.

MALAYSIA

According to Dr. Stephen Ambu, Head, Malaysian Snake Farm, Kuala Lumpur, Python reticulatus is the only protected snake in the country. Dr. Ambu is currently involved with three projects : Epidemiology of snakebites in Malaysia; Breeding cycle in Malayan pit vipers and cobras; Seasonal variation of venom in its concentration.

SOUTH AFRICA

Dr. W.R. Branch, Curator of Herpetology, Port Elizabeth Museum writes :

"P. sebae in Southern Africa enjoys considerable protection in the numerous game reserves. In addition many private farmers are aware of the potential of pythons in pest control (eg hyrax, cane rats, etc.). It is protected by Provincial Ordinance in all of South Africa, South West Africa, etc. Historically the python occurred in the Eastern Cape Province, but the last recorded specimen was killed in 1927. It is not known from the Transkei, and has probably been long ago exterminated from this traditional African homeland. Tortoises are also extinct in this region. Efforts are now being undertaken by the Cape Department of Nature Conservation to re-introduce pythons into local game reserves in the Eastern Cape."

The status of Python anchietae is difficult to determine at the moment. Its range is politically disturbed and scientific collecting impossible because of the security situation. Its rarity subjected it to collecting pressure a number of years ago, when access to the region was easier. However it occupies rugged country, and should be holding its own. It has recently been bred in captivity for the first time, and indications are that it is very easy to maintain in captivity. An organised captive-breeding program for this species should be initiated. The Transvaal Snake Park have a number of specimens, including captive-bred young, and would make a logical centre. Perhaps, it could be registered as such.

Few other snakes in Southern Africa merit consideration. As with everywhere, most species show population declines around centres of human habitation. However, these pressures are still minor in the region. The only snake in the region threatened by habitat destruction is the Gaboon adder in Zululand. But forest reserves exist in the region, and the snake is protected by specific legislation in the Province. Moreover it is wide-spread throughout the forested regions of Africa, and its decline in Zululand is a local problem.

Perhaps, the one snake that may be suffering from over-collecting is the Namaqualand adder, Bitis peringueyi. This small adder has an exotic life-style, and is much desired by zoos and pet keepers. It is relatively easy to collect, and its range is becoming increasingly accessible. Although it is unlikely to suffer from habitat destruction, it may be showing population declines due to collecting."

U S A

From John C. Murphy, Chicago Herpetological Society :

"I have some real questions about the endangered status of the Boa constrictor, Drymarchon corais couperi, and other widely distributed species that appear on endangered lists. One of the rarest snakes in North America, Clonophis kirtlandi appears only on a few state endangered lists. I think this species is representative of a lot of the problems of placing snakes on endangered lists. Clonophis is a monotypic genus and is represented by less than 300 specimens in museums. The snake is known to occur in "vacant lot" like habitats, many of the largest populations appear to be in cities, but because they are so fossorial in their habits they are seldom seen. I searched more than 3 years before I found one (and when I did, I found 2 under the same rock). I have returned to that locality about 8 times since then and not found another specimen. I have done a reasonable amount of collecting in Florida, Georgia and Texas over the past 12 years and I find indigo snakes (Drymarchon) with some regularity. They are certainly not rare, but they are commonly taken by the pet trade and sold for a relatively high price. Nobody keeps Clonophis but the largest known population of them in Illinois was recently destroyed by a developer who turned their habitat into a parking lot (as fossorial as these snakes are, I doubt they can burrow through asphalt). The massasauga (Sistrurus catenatus) is another example. This small rattlesnake has a wide distribution, but is relatively rare. I have yet to see one in a field in the state of Illinois, but I have seen them in Wisconsin (they are protected there, but not in Illinois). The one that lives in my lab came from Cook County (includes Chicago and many suburbs) and was found crossing a street in an area where houses were built up on both sides. Because this snake lives in an area with humans, and because it is poisonous, it has not been protected. Crotalus willardi, on the other hand, lives in some remote mountain areas of Arizona and New Mexico. People rarely come into contact with it, but you will note it is listed on many endangered lists. It is also collected for the pet trade and sold for a high price, but its habitat is not in danger and it would be impossible for collectors to decimate its populations because of the nature of its habitat. However, it is a politically safe poisonous snake to protect.

U.K.

Keith Corbett of the British Herpetological Society London writes :

"Our rarest reptile is undoubtedly the secretive Coronella austriaca, and we now believe that its adult population does not exceed the low thousands; members of the Cons. Com. like myself accept a pessimistic figure nearer 2000 only. The main reason for its demise is the loss and fragmentation of dry heathland (Calluna) and particularly of its mature phases. Although there are many sites of lowland dry heath designated as Sites for Special Scientific Importance (SSSIs) by our Nature Conservancy Council (NCC), scant attention has been paid, financially or man-power wise, to the essential task of active habitat management to reduce threatening encroachment of the introduced and alien pine tree (mainly Pinus sylvestris), and the similar post-fire degradation caused by subsequent encroachment from the Birch (Betula sp.) and Bracken (Pteridium sp.). The BHS have been organising and carrying out the necessary remedial management on selected reptile sites during the 1970s; this almost entirely through WWF grant aid. Our work was initially aimed at restoring habitat for the equally endangered lizard Lacerta agilis, but as the effects of this work has been monitored it has become apparent that when the site was large enough, C.austriaca breeding has also been restored. It is now pleasing to note that we are having some success in persuading owners and managers of some of those SSSIs also designated as nature reserves to similarly manage at least some parts of these reserves.

Never the less, the problem has assumed such proportions, and I should have said that this encroachment has proved irreversible when not resisted at an early date, that nothing short of a major national project on dry heath would contain the situation. Of late we have been joined by the whole of the voluntary wildlife conservation movement as encompassed by the 'Wildlife Link' pressure group.

The Grass Snake (Natrix natrix) has its own problems and which may yet turn out to be severe. Its UK distribution is restricted to the south by its egg-laying habits, and it appears that even then it is only successful in its reproduction in our relatively cool summers by its learned ability to lay in the semi-artificial incubation sites of rotting vegetation, as provided by old farm manure heaps or the saw-dust piles from saw-mills. However, by reason of economic advance these features are fast becoming things of our rural past, and being a relatively long lived snake the true effects on this species may still remain to be seen. General decline has been noted but there has been no quantification as yet. It is essential to our mind that some work is sponsored to locate this key feature of the species' ecology and perhaps protect and enhance the better of these ancestral egg-laying sites. We have recently circulated an article to the parent body of our County Naturalists Trusts for circulation to all Trust members (125,000). This gives an account of the particular vulnerability of the herps. and the need and methods for survey. Grass snake egg sites are included for special priority. How many of their

membership's active field workers will be persuaded to co-operate remains to be seen, but any extra effort will be a bonus, for naturalists are as you know rather hesitant to become involved with herp. work. Birds and flowers yes, but snakes and toads ...

Another quite unnecessary problem concerns snake killing and persecution. Coronella is protected under our law (though now its habitat) but in practice any snake-like animal may be killed under the legitimate excuse that it might be an Adder! (Vipera berus). Even on our protected and managed sites we have known examples of Natrix being blasted by shot-gun by otherwise responsible and conservation minded citizens. The overall effect cannot be judged though wherever there is public pressure snakes tend to disappear. The reason that I say this is an unnecessary problem is that the U.K. was a part to the Council of Europe's Resolution (78) 22 on amphibians and reptiles, and a signatory to the subsequent Berne Convention on Wildlife Conservation, both of which expressly require member states to forbid the deliberate killing of all snakes. Yet when our government's official advisors the NCC gave their recommendations for the recent Wildlife and Countryside Act, they felt unable to support our private amendment to make it illegal to kill any herptile in the U.K., in line with the Berne Convention ruling."

WEST INDIES

John Murphy plans to be in Trinidad for a month this summer to supervise a post graduate research project on the Zoogeography of the island's herpetofauna. Only 1980 square miles, it has 26 frog species, 7 turtles, 28 lizards and at least 40 species of snakes.



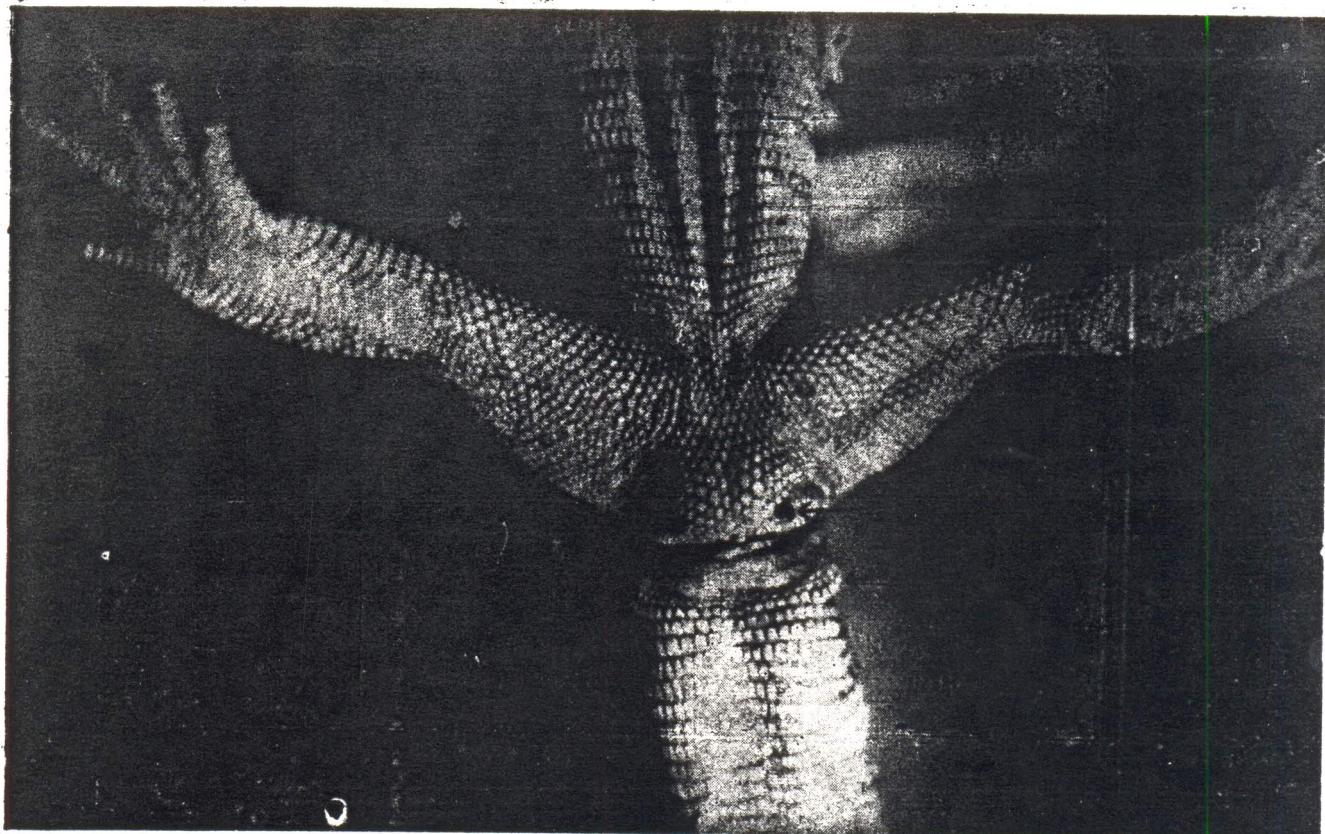
S U B S C R I P T I O N

Local : Rs. 10 annually

Foreign : \$ 2 annually [surface]

\$ 4 annually [air-mail]

Cheques should be made to the Madras Snake Park Trust



Underside of monitor lizard showing flaps and pores

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